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CONTENTS.

PAGE
General and Specific Sanitation 169
The Vegetation of High Asia 170
Alcohol as a Fuel. By J. S. S. B. 172
Chemistry and Life 173
Aristotle in English. By A. E. T. 174
A Rock-Desert. By G. A. J. C. 175
Our Bookshelf 175
Letters to the Editor:—
  The Mode of Feeding of the Jelly-fish, *Aurelia aurita*, on the Smaller Organisms of the Plankton.—Dr. J. H. Orton 178
  Roche's Limits for Satellites.—Prof. J. Joly, F.R.S. 179
  Optical Definition and Resolving Power.—J. Evershed, F.R.S. 179
  Interspecific Sterility.—Prof. R. Ruggles Gates . 179
  The Influence of Science.—Rev. A. L. Cortie, S.J. 180
  Surface Tension and Cell-Division.—H. Graham Cannon 181
Electricity and Matter. (*With diagram.*) By Sir Ernest Rutherford, F.R.S. 182
The Royal Botanic Society's Gardens. (*Illustrated.*) 185
Obituary:—
  S. P. Smith. By H. D. S. 187
Current Topics and Events 188
Our Astronomical Column 189
Research Items 190
The Norman Lockyer Observatory. (*Illustrated.*) . 192
Pioneer Work in Submarine Cable Telegraphy . 195
International Chemistry 196
Radio Broadcasting in Great Britain . . . 197
University and Educational Intelligence . . . 198
Calendar of Industrial Pioneers 199
Societies and Academies 200
Official Publications Received 200

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General and Specific Sanitation.

ALTHOUGH hookworm infection (anchylostomiasis) is so rare in this country as to be unknown except among miners, the principles governing its control give an illustration of the relationship between specific and general control over infection, which is not without value for British hygienists. For this reason a monograph recently issued by the Rockefeller Institute for Medical Research[1] is deserving of attention. Hookworm disease is chiefly a rural disease in Brazil as elsewhere, and is most prevalent where there is complete disregard of elementary sanitation, especially in warm climatic conditions, which favour the life of the hookworm embryo in the soil, and encourage workpeople to go barefooted.

Dr. Smillie's investigation shows that hookworm disease is most common in the ages between fifteen and forty. It may be correctly described as an industrial disease, as it occurs chiefly in unshod field-workers. This fact comes out more clearly when a distinction is drawn, as it should be, between hookworm infection and hookworm disease. The importance of this distinction is gradually becoming appreciated in public health. In diphtheria it forms an essential consideration; and rational measures cannot be devised for the prevention of tuberculosis, which have no regard for this distinction. In male children under ten years of age the average number of intestinal hookworms per person was 39, increasing to 169 between ten and twenty, and over 200 in men between twenty and forty years old. The injury to health occurs chiefly in the persons showing heavier incidence of intestinal worms.

The work of Looss and his successors proved that the chief mode of hookworm infection is through the skin, by its contact with fæcally contaminated moist earth, the mouth being an incidental and altogether unimportant channel of infection. This important fact in natural history suggests the two chief methods of control of the disease, the provision of latrines and covering for the feet. The third line of action, that of treatment of infected persons, has relatively smaller importance; and in Dr. Smillie's judgment treatment may properly be limited to field-workers, and may be disregarded for persons under five and over fifty-five years of age. Hookworm disease being an industrial malady, the construction of latrines in the working fields as well as domestically is indispensable if the disease is to be controlled; and the difficulty of reform in this direction is seen in the statement that there are practically no latrines in rural Brazil. As regards the second method of control, it has been found that the use of a crude pair

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[1] "Studies on Hookworm Infection in Brazil, 1918–20." Second paper by Dr. Wilson G. Smillie (Monographs of the Rockefeller Institute for Medical Research, No. 17, May 12, 1922).

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of half shoes by farm-workers has reduced infection to less than one-tenth of the usual rate suffered by those who did not wear shoes.

Only a few outstanding points in this valuable report have been cited, but enough has been given to show that in hookworm disease we have a notable illustration of the close connexion between elementary sanitation and the prevention of disease. In England we associate this connexion chiefly with diarrhœa and enteric fever, and William Budd's researches will always furnish the classical illustration of the close relations between defective latrine accommodation and the spread of infection as soon as typhoid fever is introduced into a village. The association is probably wider than is usually suspected. The relation of excessive diarrhœa to the continuance of conservancy systems in English towns and villages has been repeatedly emphasised, and there is strong reason for assuming a similar association of these systems with excessive pneumonia in young children.

But the hookworm story emphasises even more the importance of exact knowledge of the infecting agent. The provision of shoes or even their compulsory wearing is a novelty in sanitary administration from a British point of view; but it appears to be the most urgent need where hookworm disease is endemic. So, likewise, the fact that hookworm disease is an occupational disease shows where preventive work is chiefly needed, while the distinction between incidental infection and actual disease points to the persons among whom administrative control must be chiefly attempted. These contentions are illustrated in the paper by the wasted effort displayed in such public health work as the "swat-the-fly" campaign, in which a vast amount of effort and much money are expended in fruitless endeavours to eliminate flies by wholly illogical methods.

The Vegetation of High Asia.

Southern Tibet: Discoveries in Former Times compared with my own Researches in 1906–1908. By Sven Hedin. II. *A List of Flowering Plants from Inner Asia, collected by Dr. Sven Hedin, determined by various authors, and compiled by C. H. Ostenfeld and Ove Paulsen.* Pp. 25+100+8 plates. (Stockholm: Lithographic Institute of the General Staff of the Swedish Army, 1922.) 30 marks.

KNOWLEDGE of the vegetation of High Asia is now extensive. The climate, while leaving something to be desired in other respects, favours the preparation of botanical specimens, and travellers in the inclement uplands of Tibet and the Pamirs have supplied much material for herbarium use. Yet, owing to circumstances beyond their control, this material compares unfavourably with that secured by explorers in temperate and tropical regions. As a result, our acquaintance with the flora of High Asia is still far from exhaustive.

Geographical reconnaissance involves the investigation of as much ground as an expedition can map, and is thus somewhat incompatible with an intensive study of the vegetation of a given area throughout a round of the seasons. Any combination of the two activities means either that geography must be content with fewer data, or that botany must rest satisfied with indifferent material. The best botanical results of geographical expeditions are obtained during halts made when plants are in active growth.

The traveller in temperate regions may arrange his halts. In the tropics, as in high latitudes and at great altitudes, halts usually depend on meteorological conditions. Those caused by heat or rain coincide with periods of vegetative activity; those due to cold and snow occur when plants are dormant. The arctic-alpine flowering season is, besides, so brief that when the explorer sets out he may find only leaf-specimens; ere his journey ends, he may collect only specimens of plants the seeds of which have fallen. He may, if fortunate, secure complete material of species general along his route but he must be prepared for the possibility that his specimens of local plants are not always identifiable.

The botanical interest in any collection of plants from High Asia is therefore intelligible. Underlying this interest is a hope that new material may resolve old doubts. That hope explains our attitude towards arctic and alpine collections as compared with those from temperate latitudes or moderate elevations. A difference of a few days in the dates on which particular arctic or alpine camping-grounds were visited may give assurance to identifications originally tentative. The value of any High Asian collection is thus enhanced if it comes from districts already carefully investigated.

The importance of a census of the flowering plants found by Dr. Sven Hedin in the course of his various journeys in Inner Asia during 1894–1907 will therefore be readily appreciated. This census, compiled by workers so careful and competent as Prof. C. H. Ostenfeld and Dr. O. Paulsen, affords concrete evidence of the effects upon botanical survey of the exigencies of geographical exploration at great heights, and exemplifies the disadvantages against which the traveller on lofty uplands must contend.

The praiseworthy pains the authors have taken to identify many incomplete specimens have been more than justified by their results. Notwithstanding their care, the compilers have felt debarred from suggesting

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